Proposed Modifications to the Fleet Rule for Transit Agencies and New Transit Fleet Vehicle Requirements

Sacramento, California
February 24, 2005
California Environmental Protection Agency
Air Resources Board

Presentation Outline

- Background
- Summary of Proposed Regulation
- Technical Feasibility
- Benefits and Cost Effectiveness
- Conclusions and Recommendation
- Next Steps
Health Impacts of Diesels in California

- Annual health impacts - 2001
  - 2,900 premature deaths
  - 3,600 hospital admissions
  - 240,000 asthma attacks/respiratory symptoms
  - 600,000 lost days of work

- By comparison - 2001
  - 3,700 deaths from car accidents
  - 2,000 homicides

Diesel Risk Reduction Plan - In-Use Engine Measures

- Transit Fleets - Urban Buses (2000)
- Stationary Engines (2004)
- Portable Engines (2004)
- Transit Fleet Vehicles - Proposed Today
- Public HDV Fleets (2005)
- Off-Road Engines (2006)
  - Transportation Refrigeration Units (2004)
- Private HDV Fleets (2007)
Adopted Fleet Rule For Transit Agencies

- Adopted February 2000
- Applies to Public Transit Agencies
  - New Engine Emission Standards
  - In-Use Fleet Requirements

Adopted Fleet Rule For Transit Agencies

- New Engine Emission Standards
  - More Stringent than Truck Standards
  - Urban Buses Required to use Urban Bus Engines
  - Diesel Hybrid Electric Bus Standard
- Zero-Emission Bus Purchases Starting in 2008
Adopted Fleet Rule For Transit Agencies

- In-Use Fleet Requirements
  - Fuel Path Selection & Purchasing Requirement
  - Ultra Low Sulfur Diesel Fuel Use
  - Maximum Allowable Fleet NOx Average
  - Percentage Reductions of Diesel PM Emissions

Not All Transit Vehicles Are Covered by the Fleet Rule

- Diesel or Alternative Fuel Non-Urban Vehicle: 25%
- Gasoline Non-urban Vehicle: 9%
- Alternative Fuel Urban Bus: 24.5%
- Diesel Urban Bus: 41.5%
Transit Fleet Vehicle Requirements

- In-Use Fleet Requirement
  - Emission Reductions Through Retrofit or Fleet Modernization
- Not Required
  - Stricter Urban Engine Emission Standard
  - Ultra Low Sulfur Diesel
  - Path Selection or Purchasing Requirements

Transit Fleet Vehicle Requirements
Scope

- Commuter
- Paratransit
- Small Bus
- Medium Bus
  28’ to 32’
Transit Fleet Vehicle Requirements
In-Use Fleet Emission Reduction

- Maximum Allowable NOx Fleet Average
- Percentage Reduction in PM Emissions
- Two-Phase Implementation
  - 2007
  - 2010

Current Maximum NOx Fleet Average Requirement

<table>
<thead>
<tr>
<th>Fleet Type</th>
<th>Compliance Date</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>10/01/02</td>
<td>12/31/07</td>
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<tr>
<td>Urban Bus</td>
<td>4.8*</td>
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</tbody>
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* in g/bhp-hr
### Proposed Maximum NOx Fleet Average Requirement

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* in g/bhp-hr

### Current Percentage Diesel PM Reduction

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<thead>
<tr>
<th>Fleet Type</th>
<th>Baseline Year</th>
<th>2004</th>
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<th>2007</th>
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<th>2010</th>
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<tr>
<td>Alternative</td>
<td>2002</td>
<td>20</td>
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<td>85</td>
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<tr>
<td>Diesel</td>
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### Proposed Percentage Diesel PM Reduction

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<td>2004</td>
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<tr>
<td>Alternative Diesel</td>
<td>2002</td>
<td>20</td>
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<tr>
<td>TFV</td>
<td>2005</td>
<td>40</td>
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*In the final year of compliance and beyond the transit agency can meet a fleet average of 0.01 g/bhp-hr times the number of vehicles in the fleet.

### Clarifying Changes

- Commuter Service Bus Definition
- “Newly Formed” Transit Agency
- Diesel HEB Standards
- Relocation of In-Use Requirements
Clarifying Changes
Commuter Service Bus

“Commuter Service Bus”

Other Clarifying Changes

✦ “Newly Formed” Transit Agency
✦ Add NMHC and CO Diesel HEB Standards
✦ Relocation of In-Use Requirements
Technical Feasibility

- Experience with Current Rule
  - Diesel Particulate Filters: approximately 1100 installed on California Urban Buses
- For Transit Fleet Vehicles
  - Retrofit with Verified Diesel Control Systems
  - Repower Engines
  - Replace Vehicles

Benefits
PM Emission Reductions

Transit Fleet Vehicle PM Emission Reductions

- Diesel Particulate Matter Emissions (g/yr)
- Year
- Baseline
- Proposal
Benefits
NOx Emission Reductions

Transit Fleet Vehicle NOx Emission Reductions

Oxides of Nitrogen Emissions (tpd)

Year

Cost

◆ Total Cost To Transit Agencies
  ◆ $18.7 million Over 14 Years
  ◆ Most Expenditures in Next Five Years
Cost-Effectiveness

- Cost-Effectiveness
  - $65 per Pound Diesel PM Reduced
  - $1.40 per Pound NOx Reduced
  - $1.5 to 2 million per Death Avoided
- This is a Cost-Effective Method of Reducing PM and NOx

Staff Recommendations

- Adopt In-Use Fleet Requirements for Transit Fleet Vehicles
- Adopt Clarifying Changes to the Existing Requirements
- Proposal is Consistent with the Diesel Risk Reduction Plan
Next Steps

♦ July 2005
   ♦ Revisit the 2007 Urban Bus Standards
   ♦ Bring Proposals for Four SCAQMD Fleet Rules
     ♦ Transit Agencies
     ♦ Refuse Haulers
     ♦ Street Sweepers
     ♦ School Buses